

**DRAWING AMENDMENTS**

Please amend the drawing figures by canceling drawing sheet 3/8 containing Figs. 5A-5E as filed, and inserting therefor the enclosed new drawing sheet 3/8 containing Figs. 5A-5E and marked "Replacement Sheet." In Replacement Sheet 3/8, Fig. 5A has been amended.

### **REMARKS**

The Office Action mailed March 8, 2006 has been received and reviewed. By the present Response, Claims 24-29 and 36-52 are cancelled, Claims 15-17, 19-21, 23, 30, and 33-35 are amended, and new Claims 53-57 are added. Currently pending in the application, then, are Claims 1-23, 30-35, and 53-57, of which Claims 1, 30, 53, and 56 are independent. No new matter has been introduced by this Response.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description: 26' and 26" in Fig. 2 are referenced to in the specification as 26a and 26b, respectively. Paragraphs [0076] and [0077] of the specification are amended to identify the wings in Fig. 2 by using reference characters 26' and 26". And paragraph [0080] of the specification and Fig. 5A of the drawings are amended to change the reference characters 26a and 26a to 26a' and 26a". Accordingly, this objection is overcome.

### ***Specification***

The specification is objected to because of the following informalities: the bracket opening and body are both referenced as 16, while the attachment and body are both referenced as 14 (paragraph 0074, line2). Paragraph [0074] of the specification has been amended to correct these informalities. Accordingly, this objection is overcome.

### ***Claim Rejections Under 35 USC § 112***

Claims 15-16 are rejected under 35 U.S.C. 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the

invention. Claims 15 and 16 are amended to provide clarification. Accordingly, these rejections are overcome.

***Claim Rejections Under 35 USC § 101***

Claims 17, 20-21, 30 and 34-35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 17, 19, 20, 21, 30, and 33-35 are amended to inferentially recite the teeth so that they are not positively recited in combination with the brackets, the attachments, and/or the appliance. The Applicant intends to claim only the sub-combination of the brackets, the attachments, and the appliance. The Applicant does not intend to claim human teeth in combination with the brackets, the attachments, and/or the appliance. Accordingly, these rejections are overcome.

***Claim Rejections Under 35 USC § 102(b)***

Claims 1-12, 14-15, 17, 19-20, 30 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Takemoto (USPN 6,264,468). Claims 1 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Cash (USPN 5,616,026). Claims 1, 16, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe (USPN 5,230,620). The Applicant respectfully traverses. Because the rejections to Claim 1 are all traversed for the same reasons, they are addressed collectively.

Claim 1 recites an orthodontic bracket that does not have any type of mounting base that provides a surface that is suited to be bonded directly to a tooth and thereby fix the position of the bracket. Instead, the bracket has a body that forms a wire opening that can be positioned at a customized pre-selected angle to the tooth surface in free space, given

the particular size, shape, and position of the tooth, without a mounting base or other structure that would create a lever arm against the tooth surface.

On the other hand, Takemoto, Cash, and Watanabe each disclose conventional bracket-like orthodontic devices having a mounting base plate for mounting directly to the tooth. In Takemoto, a bracket has a pad 13 that in use is bonded directly to a tooth surface (see FIG. 2 and col. 10, lines 48-52). In Cash, a bracket-like appliance has a base 70 that in use is bonded directly to the tooth surface (see FIGS. 1 and 4F, and col. 4, lines 5-8). In Watanabe, a bracket-like buccal tube has a base portion 1 that in use is bonded directly to the tooth surface (see FIG. 3 and col. 2, lines 59-60). In short, each of these references discloses a conventional bracket-like device having a conventional plate-like mounting base that is designed specifically for providing a large, broad surface area for bonding the bracket directly to the tooth. But using these plate-like mounting bases fixes the position (displacement/offset from the tooth) and orientation of the wire opening when the bracket is mounted to the tooth. If the position and orientation of the bracket were altered to set the wire opening in a desired position and orientation, then the base plate would not lie flat against the tooth, and the edge of the base plate would act as a lever arm when the wire is installed and force applied. In addition, this would increase the distance between the wire opening and the tooth surface such that the bracket would protrude even more and cause discomfort to the patient. As discussed above, these problems are overcome by the claimed bracket, which provides flexibility in positioning and orientating the wire opening, with the bracket having a low profile. For these reasons, the Applicant believes that Claim 1 as filed is in condition for allowance, and requests reconsideration of these rejections.

It should be noted that Cash discloses a bracket-like appliance having a body and a separate base that are assembled together. As written, Claim 1 defines a bracket with a body that does not have a mounting base extending from it, regardless of whether the body and the base are made as a single piece or made as separate pieces and assembled

together. Also, Claim 1 defines the bracket body not having a base surface area for bonding “directly” to the tooth. When attaching a conventional bracket to a tooth, a thin layer (sufficient for bonding the broad surface of the mounting base plate to the opposing surface of the tooth) of a bonding agent is typically pressed between the bracket base and the tooth. So as used in the claims, not having a base with surface area for “bonding ‘directly’ to the tooth” means not having the typically plate-like base with a broad surface area for contacting the tooth, except for the thin layer of bonding agent.

New Claim 53 is added to further distinguish over the cited references. Claim 53 is the same as Claim 1, except that it recites the bracket being “adapted to be encapsulated or embedded into the adhesive mass in a position at least partially offset from the tooth,” as shown in the drawing figures and described in Para. [0091]. Also, conventional brackets such as the cited references all have a base plate, a body that defines the opening, and offset arm extending between and connecting the base plate and the body. This conventional configuration sets the position and orientation of the wire opening to that it is displaced/offset from the tooth when the base plate is bonded directly to the tooth. However, Claims 53 recites the bracket not having an offset arm between the base plate and the body (which defines the opening). As mentioned above in this paragraph, the bracket of Claim 53 is offset and held in place by the adhesive mass, not an offset arm. Additionally, Claim 53 recites the bracket being positionable in “free space with six degrees of freedom in a pre-selected spatial orientation based on the tooth anatomy,” without “creating a lever arm against the tooth,” and with “no part of the bracket between an open side of the opening and the tooth,” as is shown in various of the drawings figures. These recited elements are not found in the cited references, which all have the conventional base-plate-to-offset-arm-to-body configuration that does not permit flexibility in positioning and orientating the wire opening in the body.

Furthermore, Claims 53 recites the “bracket” (instead of the “body”) not having a base plate. This distinguishes over all brackets that have a mounting base plate, whether

the base plate is integral with the bracket body or whether they are separate structures as disclosed in Cash. And finally, the “base” is recited as a “base plate” because a broad plate-like structure is the conventional structure used in orthodontic brackets to provide a larger surface area suitable for bonding to the tooth. For these reasons, the Applicant believes that new Claim 53 is in condition for allowance.

New Claim 54 further defines the retention wings being “adapted to provide a surface area for bonding to the adhesive mass. . . .” These claimed wings are extensions or protrusions from the bracket body that provide an increased surface area for bonding to the adhesive mass when the bracket is positioned offset from or adjacent to the tooth and embedded or encapsulated in the adhesive mass, without creating a lever arm against the tooth. On the other hand, the wings of the cited references are conventional tie wings for tying down ligatures, which in turn secure the wire in the slot or opening when the bracket base is bonded to the tooth. None of the cited references disclose, teach, or suggest wings that are offset from the tooth and for bracket-to-tooth bonding purposes. For this reason, Claim 54 is believed to be in condition for allowance.

New Claim 55 recites the body having an open side that is closed off by the adhesive mass when the bracket is embedded or encapsulated in the adhesive mass. None of the cited references disclose, teach, or suggest the adhesive forming a sidewall of the opening. For this reason, Claim 55 is believed to be in condition for allowance.

New Claim 56 is similar to new Claim 53, except that the term “consisting” is used in Claim 56 to define that the bracket has no other elements. And new Claim 57 is similar to new Claim 54, except that the term “consisting” is used in Claim 57 to define that the bracket has other elements. For these reasons, Claims 56 and 57 are believed to be in condition for allowance.

Regarding Claim 3, which recites that “the body has a low profile width that is equal to a depth of the opening plus a thickness of the lingual sidewall,” the detailed action states that Fig. 22B of Takemoto anticipates this feature. However, Fig. 22B of Takemoto only

shows the body of the bracket (see col. 9, lines 25-28). Actually, the width of the Takemoto bracket additionally includes the base (not shown in Fig. 22B). The real-world result is that the width of Takemoto's bracket is between 4.0mm and 5.4mm (according to Fig. 22B), while typical commercial embodiments of the present invention have a width of about 0.8mm, which is at least five times smaller than Takemoto's. For these reasons, Claim 3 is not anticipated by this reference.

Claim 4 recites that "when the bracket is offset from the tooth then no part of the bracket contacts the tooth, and when the bracket is adjacent to the tooth then the gingival sidewall, the occlusal sidewall, or both contact the tooth. The detailed action states that Fig. 1 of Takemoto anticipates these elements. However, Fig. 1 of Takemoto only shows the bracket positioned adjacent the tooth. Fig. 1 does not show the bracket positioned offset from the tooth (only one position of the bracket is shown in Fig. 1). And Fig. 1 shows the base plate, which is most definitely a part of the bracket, contacting the tooth. Thus, Claim 4 is not anticipated by this reference.

Claim 5 calls for "the opening [being] rectangular" and "the rectangular opening [being] level." The detailed action states that Fig. 5 of Takemoto anticipates these elements. However, Fig. 5 of Takemoto does not show the brackets or openings, and it is a *plan* view that does not show elevation. On the other hand, Figs. 3-4 and 7-10 of the present application are elevation views of the brackets and their rectangular openings remaining in level positions (i.e., the gingival and occlusal sidewalls of each opening remains generally horizontal) when the brackets are positioned in different orientations (see also paras. [0077] and [0087]). For this reason, Claim 5 is not anticipated by this reference.

Claims 17 and 30 each call for "a mass of adhesive for bonding to the tooth" and for the bracket being "embedded in the adhesive mass." The detailed action states that Takemoto anticipates these elements. However, Takemoto only discloses conventional use of adhesive to bond the base plates of bracket to teeth. This conventional use

involves applying a thin layer of the adhesive to the base plate and then positioning the base plate on the tooth so that the thin layer of adhesive is between and bonds together the base plate and the tooth. However, Takemoto does not disclose, teach, or suggest “embedding” the bracket into a “mass” of the adhesive as is claimed. As is clearly shown in the drawing figures, a “mass” of adhesive as used in the present application means a bead, dollop, or lump of adhesive into which the bracket can be “embedded” (sunk into but not completely covered; fixed firmly in a surrounding mass) or “encapsulated” (sunk into and completely covered or encased except for the end openings). “Embedding” the bracket in a “mass” of adhesive with the opening offset from the tooth is entirely different from and not anticipated by a conventional thin layer of adhesive bonding the base plate to the tooth. For this reason, Claims 17 and 30 are not anticipated by this reference.

The remaining rejected claims are dependent from Claim 1, which is believed to be in condition for allowance for the reasons set forth above. Accordingly, these dependent claims are also believed to be in condition for allowance.

***Claim Rejections Under 35 USC § 103(a)***

Claims 18 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto in view of Sahagian (USPN 6,299,438). The Applicant respectfully traverses. Claims 18 and 31 each call for the adhesive mass “encapsulate[ing]” the bracket “except for the opening.” The detailed action states that Takemoto anticipates these elements. However, Sahagian only discloses adhesion “layers” and “substrates.” And these adhesion “layers” and “substrates” are for bonding to an outer layer—a coating with low-friction properties—not for bonding to the tooth. In addition, Sahagian does not disclose, teach, or suggest “encapsulating” the bracket in anything. For these reasons, these claims are believed to be in condition for allowance.



Claims 21 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto in view of Fujita (USPN 4,354,833). Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto in view of Rosenberg (USPN 4,712,999). These claims are dependent from Claims 1 or 30, which are believed to be in condition for allowance for the reasons set forth above. Accordingly, these dependent claims are also believed to be in condition for allowance.

In addition, Claim 23 is amended to recite that the finger of the clip blocks the opening to prevent the adhesive mass from intruding into the opening. This keeps the opening free of the adhesive so that when the clip is removed the arch-wire can be inserted. This feature is not disclosed, taught, or suggested by the cited references. For this additional reason, Claim 23 is believed to be in condition for allowance.

#### ***Miscellaneous Issues***

Claims 24-29 and 36-52, which were previously withdrawn, are hereby canceled from this application.

Claim 6 is amended to correct an obvious error (see para. [0078] and Figs. 2-4).

Paragraph [0117] of the specification has been amended to add the serial number of the application being referenced.

**CONCLUSION**

In view of the amendments submitted herein and the above comments, it is believed that all grounds of rejection are overcome and that the application has now been placed in full condition for allowance. Accordingly, Applicant respectfully requests early and favorable action. Should there be any further questions or reservations, the Examiner is urged to telephone the Applicant's undersigned attorney at (770) 984-2300.

Respectfully submitted,

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